

## ABSTRACT OF THE DISCLOSURE

Insulated gate field effect transistors having gate electrodes with at least two layers of materials provide gate electrode work function values that are similar to those of doped polysilicon, eliminate the poly depletion effect and also substantially prevent impurity diffusion into the gate dielectric. Bi-layer stacks of relatively thick Al and thin TiN for n-channel FETs and bi-layer stacks of relatively thick Pd and thin TiN, or relatively thick Pd and thin TaN for p-channel FETs are disclosed. Varying the thickness of the thin TiN or TaN layers between a first and second critical thickness may be used to modulate the work function of the gate electrode and thereby obtain the desired trade-off between channel doping and drive currents in FETs.